Claims

1. An isolated or purified 55kDa extracellular protein of *Photobacterium damselae* subsp. *piscicida* having apoptogenic properties, or an immunogenic derivative thereof.

2. An isolated amino acid sequence comprising SEQ ID NO:2, or an immunogenic derivative thereof.

3. An isolated nucleic acid sequence comprising SEQ ID NO:1, or a substantially homologous sequence, or a fragment thereof, or a sequence hybridizing thereto under stringent conditions.

4. An isolated nucleic acid sequence according to claim 3 encoding an immunogenic derivative of SEQ ID NO:2.

5. A vaccine comprising an amino acid sequence derivative according to claim 2, and a pharmaceutically acceptable carrier.

6. A vaccine according to claim 5 wherein said derivative is an immunogenic fragment of SEQ ID NO:2.

7. A vaccine according to claim 5 or claim 6 wherein said derivative is a recombinantly expressed protein.

8. Use of an amino acid sequence or derivative according to claim 2 as a medicament.

9. Use of an amino acid sequence derivative according to claim 2 in the manufacture of a medicament to prevent or treat pasteurellosis in fish.

10. Antibodies raised against the isolated amino acid sequence of claim 2.

11. A DNA expression vector comprising the nucleic acid sequence of claim 3 wherein said nucleic acid sequence is operably linked to a transcriptional regulatory sequence.

12. A host cell transformed with the DNA expression vector of claim 11.

13. A vaccine comprising the DNA expression vector of claim 11, and a pharmaceutically acceptable carrier.

14. A method of preventing or treating pasteurellosis in a fish vulnerable to the disease, comprising administering to said fish a vaccine according to claim 5 or claim 13.

15. A method of preparing a vaccine against pasteurellosis, comprising the steps:
(a) growing *Photobacterium damsela*e subsp. *piscicida* cells in culture;
(b) separating supernatant from the cells;
(c) optionally, concentrating the supernatant; and
(d) inactivating the supernatant with an inactivating agent.

16. A method according to claim 15 wherein in step (a) the cells are grown until mid-exponential phase, at which point step (b) is carried out.

17. A method according to claim 15 or claim 16 wherein said inactivating agent is formaldehyde.

18. A vaccine composition comprising an inactivated cell culture supernatant or extracellular protein preparation rich in p55 from *Ph. damselae* subsp. *piscicida*.

19. A vaccine composition according to claim 18 wherein said inactivated cell culture supernatant or extracellular protein preparation is the sole immunogenic component of the vaccine composition.

20. A vaccine composition according to claim 18 or claim 19 wherein the cells have been cultured without iron supplementation and in the absence of iron chelating agents.

21. A vaccine composition according to claim 20 wherein said cells have been cultured in medium containing less than 15µm iron.

22. A vaccine composition according to any of claims 18 to 21, wherein said cell culture supernatant is prepared from cell cultures grown to mid-exponential phase.

23. A vaccine composition according to claim 18, obtainable by the method of claim 15.

24. Use of an isolated amino acid sequence according to claim 2 or an isolated nucleic acid sequence according to claim 3, or antibodies according to claim 10 in the manufacture of a test for the diagnosis of infection with *Photobacterium damselae* subsp. *piscicida* or of pasteurellosis in fish.

25. A diagnostics test kit comprising an isolated amino acid sequence according to claim 2 or an isolated nucleic acid sequence according to claim 3, or antibodies according to claim 10, affixed to a matrix.